

WHAT IS CLAIMED IS:

1. A semiconductor device comprising a semiconductor substrate and an interlayer dielectric film formed on said semiconductor substrate, said interlayer dielectric film including a lamination consisting essentially of an adhesive film
5 constituted essentially by a silicon-based compound having an aromatic ring in a molecule of said silicon-based compound and a low dielectric constant film constituted essentially by an organic low dielectric constant material having a specific dielectric constant not greater than 4 and contacting said adhesive
10 film.

2. The semiconductor device as set forth in Claim 1, wherein said aromatic ring is a fused ring.

3. The semiconductor device as set forth in Claim 1, wherein said silicon-based compound includes a benzocyclobutene unit in a molecule thereof.

4. The semiconductor device as set forth in Claim 1, wherein said silicon-based compound contains a silylene unit in a molecule thereof.

5. The semiconductor device as set forth in Claim 1, wherein said silicon-based compound is a polymer formed through polymerization of a monomer containing a divinylsiloxane bisbenzocyclobutene unit.

6. The semiconductor device as set forth in Claim 5, wherein said silicon-based compound is a polymer formed through plasma polymerization of said monomer.

7. The semiconductor device as set forth in Claim 1, wherein

said organic low dielectric constant material does not contain an Si-H bond.

8. The semiconductor device as set forth in Claim 7, wherein said organic low dielectric constant material is one of methylsilsesquioxane and SiOC.

9. The semiconductor device as set forth in Claim 1, wherein said lamination is formed by depositing said adhesive film and said low dielectric constant film in this sequence.

10. The semiconductor device as set forth in Claim 1, further comprising a metal wiring formed on said semiconductor substrate, wherein said lamination is formed on said metal wiring.

11. The semiconductor device as set forth in Claim 10, wherein said adhesive film is formed in contact with said metal wiring, and further said low dielectric constant film is formed on said adhesive film.

12. The semiconductor device as set forth in Claim 10, wherein said metal diffusion barrier is formed on said metal wiring, and said adhesive film and said low dielectric constant film are formed in this sequence on said metal diffusion barrier.

13. The semiconductor device as set forth in Claim 10, wherein a cap metal is provided on an upper surface of said metal wiring, and said adhesive film is formed in contact with said upper surface of said cap metal.

14. A method of manufacturing a semiconductor device, comprising: forming on a semiconductor substrate an adhesive film constituted essentially by a silicon-based compound having an aromatic ring in a molecule thereof; and forming a low dielectric

5 constant film constituted essentially by an organic low dielectric constant material having a specific dielectric constant not greater than 4 over said adhesive film.

15. The manufacturing method as set forth in Claim 14, further comprising: performing UV treatment or plasma treatment of said adhesive film after the step of forming said adhesive film, and performing the step of forming said low dielectric constant film.

16. The manufacturing method as set forth in Claim 14, further comprising: forming a metal wiring on said semiconductor substrate, and subsequently performing the step of forming said adhesive film.

17. The manufacturing method as set forth in Claim 14, further comprising: forming a metal diffusion barrier on said metal wiring between the step of forming said metal wiring and the step of forming said adhesive film.

18. The manufacturing method as set forth in Claim 14, further comprising: forming a cap metal on an upper surface of said metal wiring; and forming said adhesive film in contact with an upper surface of said cap metal.

19. A method of manufacturing a semiconductor device comprising: forming on a semiconductor substrate a low dielectric constant film constituted essentially by an organic low dielectric constant material having a specific dielectric constant not greater
5 than 4; and forming an adhesive film constituted essentially by a silicon-based compound having an aromatic ring in a molecule thereof over said low dielectric constant film.

20. The manufacturing method as set forth in Claim 19, wherein the step of forming said adhesive film includes the step of

polymerizing a monomer containing a divinylsiloxane
bisbenzocyclobutene unit and said polymerizing is plasma
5 polymerization.

21. The manufacturing method as set forth in Claim 14, wherein
said organic low dielectric constant material does not contain
an Si-H bond.

22. The manufacturing method as set forth in Claim 19, wherein
said organic low dielectric constant material does not contain
an Si-H bond.

23. The manufacturing method as set forth in Claim 21, wherein
said organic low dielectric constant material is one of
methylsilsesquioxane and SiOC.

24. The manufacturing method as set forth in Claim 22, wherein
said organic low dielectric constant material is one of
methylsilsesquioxane and SiOC.